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MENTAL EVOLUTION IN MAN AND THE LOWER ANIMALS.

By Alice Bodington.

(*Continued from page* 494.)

Among the lower animals the eager jumping of a dog when he is anxious to go for a walk, his growling, howling and barking to express various emotions are on a similar psychological level with the first demonstration of wishes on the part of the infant. Some of the signs and sounds expressed by domestic animals are indeterminate and some determinate, and every owner of a dog or cat can supply examples for himself.

The next step in advance taken by the infant is the utterance of articulate sounds; first various vowels and labials, *vaguely uttered without definite meaning;* then similar sounds with a definite meaning, as mamma, dada, tata, etc. These early sounds have a very extended meaning, as in Chinese the same word "bye-bye" means bed and bed-clothes, sleep and to go to sleep. But as the application of these simple syllables is usually taught to the child we are not quite at the standpoint of primitive man, who had no one to teach him. There are three different sets of opinions as to the origin of spoken words which have been named the "Pooh-pooh," the "Bow-wow" and the "Yo-heave-o" theories respectively. The first assigns the origin of language to interjectional sounds, the second attributes it to imitation of cries of animals and sounds in nature, and the third considers speech arose from the various noises made by men during concerted action. A fourth assumes language to be a heaven-sent gift and that primitive language began with abstract ideas. Applying the inductive method of reasoning and watching the development of speech in infants and the condition of language in low savages we can hope to form some idea as to how much or how little truth there is in the above theories. We shall probably come to the conclusion that the first two theories account for a considerable number of words and that "Bow-wow" or imitative language may have given rise to many words whose imitative origin is now obscured. But watching as before the progress of the child we find that *it possesses a faculty hardly, if at all, used by its elders, of coining new words* to suit its own convenience. These words will in many cases be utterly different from the words which the child hears grown-up people apply to an object, yet the new word, having been coined by the child, will be rigidly applied to the particular object or action it was first applied to. Mr. Romanes gives several instances of children who possessed this faculty to a remarkable degree, up to the point indeed, of speaking a language of their own invention. One case is that of twin boys living in a suburb of Boston, "who, at the usual age began to talk, but strange to say, not their mother tongue. It was in vain that a little sister five years older than they tried to make them speak in ordinary English.[1] They had a language of their own, and no pains could induce them to speak anything else. Not even the usual first words 'papa,' 'mamma,' did they ever speak. In fact, though they had the usual affections, were rejoiced to see their father at his returning home each night, playing with him, etc., they would seem to have been otherwise completely taken up with each other. They passed the day playing and talking together in their own speech with all the liveliness and volubility common to children. They had regular words, a few of which the family learned to distinguish, as that for example for carriage, which was 'ni-si-boo-a,' of which the syllables were sometimes so repeated as to make a much longer word." The next case is quoted from Dr. E. Hun, who recorded it in the monthly Journal of Psychological Medicine. "The subject of this observation is a girl aged four and a half, sprightly, intelligent and in good health. It was observed she was backward in speaking, and at two years old only used the words 'papa,' 'mamma.'

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[1] Paper read by Mr. Horatio Hale, published in the Proceedings of the American Association for the Advancement of Science, Vol. xxxv, 1886.

After that she began to use words of her own invention, and never employed the words used by others. Gradually she enlarged her vocabulary. She has a brother eighteen months younger than herself who has learned her language, so that they can talk freely together. He, however, seems to have adopted it only because he has more intercourse with her than with the others; he will use a proper word with his mother, and his sister's with her."

The mother has learned French, but never uses that language in conversation and the servants speak English without any peculiarities. "Some of the words and phrases have a resemblance to French, but it is certain that no person using that language has frequented the house. Of words formed by imitation of sounds the language shows hardly a trace. The mewing of the cat evidently suggested the word "mea," which signified both cat and furs. In some of the words the liking which children and some races of men have for the repetition of sounds is apparent. Thus we have 'migno-migno,' signifying water, wash, bath; 'go-go,' delicacies, as sweets or dessert; and 'waia-waia,' black, darkness, or a negro." "Gum-migur," we are told, signifies all the substantials of the table, such as bread, meat, vegetables, etc., and the same word designates the cook. A number of additional instances of this strange vocabulary are given.[1] "They show," says Mr. Romanes, "that the spontaneous and arbitrary word-making which is more or less observable in all children beginning to speak may, under favorable circumstances, proceed to an astonishing degree of fulness and efficiency; that although the words thus invented are sometimes of onomatopoetic origin, as a general rule they are not so; that the words are far from being always monosyllabic;[2] that they admit of becoming sufficiently numerous and varied to constitute a not inefficient language; and that the syntax of this language presents obvious points of resemblance to the gesture language of mankind." This faculty of coining fresh words, now almost lost by adults, must once have existed as a normal state of things among human beings or it would not survive in the child.

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[1] Mental Evolution of Man, p. 140.

[2] Where a child uses a monosyllabic word it constantly doubles the syllable.—A. B.

Next to the impression made upon cells by their environment, producing the most profound and extraordinary changes of structure and functions, nothing can be more strange than the persistent heredity or atavism in cells. We can find a parallel for these two opposing forces in the centrifugal and centripetal forces which keep the planets in their orbits. What millions of ages must have elapsed since the ancestors of man diverged from the primeval worm-like hermaphrodite form! Yet not only do numerous organs survive in a more or less rudimentary condition, pointing conclusively to this origin, but there is every now and then a strange relapse to the hermaphrodite condition. The branchial arches found in every mammal with loops of blood-vessels running up to them point to an ancestry less remote, yet for all that, almost unimaginably far away in the past. The pineal gland deep hidden under the immensely developed brain of man, still tells of a third eye which could once look through an opening in the skull. And a small bone of the wrist, of no imaginable use to any mammal at present, may be a survival of an amphibian ancestor's sixth finger. So we may well believe that the faculty of fresh word-making which is being killed out in our children by the use of language ready-made in all around them is capable of a sudden revival. No doubt many of my readers will recall from their own experience the power of coining fresh words possessed by their children and the curious reduplication of syllables employed by them. We may conclude that if miocene man did not coin fresh words for himself and insist upon employing them as he chose, he was incapable of doing what his young descendant can do every day.

With regard to the theory that abstract terms were the first words used we have not only the objection that all abstract terms used by us can be traced back to material objects and actions; and the objection that no one could have understood ready-made abstract terms without a miracle; but the still stronger argument that numberless savage and semi-savage peoples cannot understand and do not use abstract terms to this day. Even so simple an abstract idea as "tail" or "tree" is beyond the scope of their minds. Numerous instances of this fact are given by Mr. Tylor in his Primitive Culture, but I will cite some of those given by Mr. Romanes. "The Society Islanders have names for dog's tail, bird's tail, sheep's tail, etc., but no word for tail itself, *i. e.*, tail in general. The Mohicans have words to signify different kinds of cutting but no verb 'to cut;' and forms for 'I love him,' 'I love you, etc.,' but no verb 'to love;' while the Choctaw's have names for different species of oak, but no name for the genus 'oak.' Again the Australians have no name for tree or even for bird, fish, etc., and the Esquimau, although he has verbs which signify to fish seal, to fish whale, etc., has not any verb 'to fish.' 'Les langues' De Ponceau remarks 'généralisent rarement,' and he shows they have not even any verb to imply 'I will' or 'I wish,' although they have separate verbal forms for 'I wish to eat meat,' 'I wish to eat soup;' neither have they any noun substantive which signifies 'a blow,' although they have a variety which severally mean blows with as many different kinds of instruments." Similarly Mr. Crawford tells us "the Malay is very deficient in abstract words; and the usual train of ideas of the people who speak it does not lead them to make a frequent use even of those they possess. With this poverty of the abstract is united a redundancy of the concrete," and he gives many instances of the same kind as those cited from other languages. So likewise we are told 'the dialect of the Yubes is rich in nouns denoting different objects of the same genus, according to some variety of color or deficiency of members or some other peculiarity, such as 'white cow,' 'brown cow,' 'red cow;' and the Sechuano has no fewer than ten words all meaning 'horned cattle.' Cherokee presents thirteen different verbs to signify different kinds of washing without any to indicate washing itself. The Tasmanians had no words representing abstract ideas; for each variety of gum tree, wattle tree, etc., they had a name, but none for tree; neither could they express abstract qualities, such as hard, warm, soft, cold, long, short, round. A Kurd of the Yuga tribe who gave Dr. Latham a list of native words was not able to conceive of a hand or father except so far as they were related to himself or to someone else."

In Prof. Duncan's learned Analysis of the Cherokee Language he confirms the view that savage tribes cannot express such simple abstract terms as 'hand' or 'write.' He says "Human language is not always or necessarily *expressive;* it is sometimes merely *suggestive.* In the lower grades of social life the words are generally few in number and limited in meaning. Many of them can, indeed, hardly be called words; they are more like unintelligible exclamations whose office it is not to imprint an idea or a thought upon the apprehension of the person addressed as do the words of a cultured tongue, but rather to arrest the attention and direct it to the subject in hand, leaving the desired impressions to arise in his mind as the result of his observation and reflexion. In these rudimentary tongues sentences are to be found in an embryonic state. The Cherokee is not aware that his language contains any word for hand; it is always 'äquayānē' (my hand); that is the idea of hand is always attended in expression with a conception of the person to whom it belongs. Now if we should resolve this word and assign to each idea its respective part it would stand thus: 'Äquä ayānē' (my hand), yet if these words should pass under the eyes of a Cherokee he would doubtless fail to recognize them and be apt to repudiate them as something foreign to his native vocabulary.

" While what we have said here is largely true in reference to the nouns it is much more so as to the verbs. The Cherokee never expresses the idea of an action except in connection with that of the actor, and often of the person acted on. And the adjective in expressing a quality seldom loses sight of the object to which it belongs." Speaking of the Cherokee word signifying write Prof. Duncan says: "It is to be doubted whether it was ever heard or written except in some such conglomeration of vocables as 'Wētsóyawĕlēnētóyĕ,' of which the portion 'awāl' conveys the idea of writing or drawing.[1]" In its abstract state the word would, however, be quite unintelligible and requires combination with various pronouns, tense and mode signs before it can be understood or used by a Cherokee.

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[1] AMERICAN NATURALIST, p. 775, September, 1889.

It is not contended, of course, that a savage *has* no general or abstract ideas because he *may* be incapable of expressing them. Animals have general ideas which they cannot express in language. And the savage who has no name for trees would be extremely surprised if he saw one standing on its tips with its roots in the air; one may be sure he has a general idea of a tree, with its roots in the ground and its tip towards the sky. In the same way the horses and camels at Batoura which were inordinately terrified at the first sight of a carriage and pair knew they saw something quite fresh and unaccustomed, though they had no word for it. And the horses and cattle which have grown accustomed to trains have a general idea that the rushing, screaming, roaring object is perfectly harmless, though they cannot say so. Moreover they acquire this conviction from experience.

If, then, we can accept ontogeny as a guide in understanding the primitive beginnings of human speech we may conclude that the steps consisted of screaming, varied in tone as fear or anger was to be expressed; vague labials formed by the passing of the air through the lips and gums; then labials uttered with a distinct purpose, followed in many cases by *new words invented by the child for objects.* My efforts to induce a child of my own to say "milk" resulted in the invention of the word "ningey" for that article of diet, and the attempt to teach two other children to say "nurse" resulted in the christening of that functionary as "wo" and "nan," respectively; in fact, the invention of a completely new word is as easy for a child as it is notoriously difficult for an adult human being.

One of the most extraordinary boundaries that could have been selected as the "Rubicon of mind" has been fixed in the possession of a verb which once expressing such simple concrete ideas as "to stand," "to breathe," has acquired the abstract signification "to be." "If a brute could think 'is' brute and man would be brothers." Here is the point where instinct ends and reason begins. It is not possible to produce a brute which can *say* "is" (whatever it may think), for the simple reason that brutes do not employ articulate language. But languages belonging to the highest ancient civilizations, as "well as the languages of savages, have also no word for "is." Taking one instance only, the Coptic, it has been observed[1] "what are called the auxiliary and substantive verbs in Coptic are still more remote from all essential verbal character than the so-called verbal roots. On examination they will almost always be found to be articles, pronouns, particles or abstract nouns, and to derive their verbal functions entirely from their accessories or from what they imply. In fact, any one who examines a good Coptic grammar or dictionary will find there is nothing formally corresponding with our 'am,' 'art,' 'is,' 'was.' The Egyptians had, however, at least half a dozen methods of rendering the Greek verb substantive when they desired to do so." Instead of saying 'Petrus est,' 'Maria est,' 'Homines sunt,' it is quite sufficient and perfectly intelligible to say 'Petrus hic;' 'Maria hoce,' 'Homines hi." The above forms, according to Champollion and other investigators of ancient hieroglyphics, occur in the oldest known monumental inscriptions, showing plainly that the ideas of the ancient Egyptians as to the method of expressing the category 'to be' did not accord with those of some modern grammarians. . . . . Every Semitic scholar knows that personal pronouns are employed to represent the verb substantive in all the known dialects, exactly as in Coptic, but with less variety of modification. . . . . The phrase 'Ye are the salt of the earth' is in the Syriac version 'You they (*i. e.*, the persons constituting) the salt of the earth.' Nor is this employment of the personal pronoun confined to the dialects above specified, it being equally found in Basque, in Gala, in Turco-Turanian and various American languages. . . . .

"Malayan, Japanese and Malagassy grammarians talk of words signifying to be; but an attentive comparison of the elements which they profess to give as such, shows clearly that they are no verbs at all but simply pronouns or indeclinable particles commonly indicating the time, place or manner of the specified action or relation. . . . A verb substantive such as is commonly conceived, vivifying all connected speech and binding together the terms of every logical proposition, is much upon a footing with the phlogiston of the chemists of the last generation—*vox et prœterea nihil.* . . . If a given subject be 'I,' 'thou,' 'he,' 'this,', 'that,' 'one;' if it be 'here,' 'there,' 'yonder,' 'thus,' 'in,' 'on,' 'at,' 'by;' if it be 'sits,' 'stands,' 'remains,' or 'appears' we need no ghost to tell us that it *is*, nor any grammarian or metaphysician to proclaim that recondite fact in formal terms."

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[1] Garrett on the Nature and Analysis of the Verb. Proc. Philo. Soc., Vol. iii.

It seems then that no more unfortunate point could have been chosen than the use of the verb "to be" as constituting the Rubicon of mind; it has only served to accumulate proofs that there is no Rubicon in the sense of a distinct barrier between the minds of men and animals, and that if a dividing line be arbitrarily drawn it must be not between man and brute, but between the lower animals, young children and savages on the one hand and civilized man capable of true abstract ideas on the other.

A young child has made a distinct step in advance when he speaks of himself in the first person. But many tribes of savages have never yet risen to this consciousness of the "ego;" but for such an expression as "I will eat the rice" we have recourse to the form "The eating-of-me-the-rice."[1]

If a child exclaims "black man" at the sight of a negro he expresses the same idea that we do in saying "that man is black;" if he says "dit ki" (sister is crying), "dit dow ga" (sister is down on the grass), "dat a big bow-wow" (that is a large dog),[2] he is implicitly predicating certain facts and forming certain judgments precisely as if he formally used the copula. "The child perceives a certain fact and states the perception in words *in order to communicate information of the facts to other minds*, just as an animal under similar circumstances will employ a gesture or vocal sign." A cat cannot express in words the ideas "my kitten is shut in a drawer;

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[1] Malayan and Polynesian Languages. Mental Evolution of Man, p. 313.

[2] See p. 203, Mental Evolution of Man.

you can take it out if you come;" but she can eloquently express her meaning by vocal signs and gestures.

Another clue to the evolution of language may be found in the sign language of educated deaf-mutes and its grammatical construction. The deaf-mute does not make the statement "bring a black hat," but "hat black bring;" not "I am hungry, give me bread," but "hungry, me bread give." The Abbé Sicard says: "A pupil to whom I put this question, 'who made God?' replied 'God made nothing.' I was accustomed to this inversion usual amongst the deaf and dumb, and I went on to ask him 'who made the shoe?' and he answered, 'the shoe made the shoemaker.' Laura Bridgman would spell on her fingers 'that door,' 'give book,' which she had been taught, but when she made sentences for herself she reverted to the usual deaf-and-dumb system, 'Laura bread give,' 'water drink Laura,' to express her wish to eat or drink."

Mr. Tylor says: "The gesture language has no grammar properly so-called; it knows of no inflections of any kind more than the Chinese. The same sign stands for 'walk,' 'walkest,' 'walking,' 'walked,' 'walker.' Adjectives and verbs are not readily distinguished by the deaf-and-dumb. 'Horse, 'black,' 'handsome,' 'trot,' 'canter,' would be the rough translation of the signs by which a deaf-mute would state that a handsome, black horse trots and canters. The deaf-mute strings together the signs of the various ideas he wishes to connect, in what appears to be the natural order in which they follow one another in his mind, *for it is the same among the mutes in different countries*, and is wholly independent of the syntax which may happen to belong to the language of their speaking friends.

With regard to the sign language of Indians Mr. Tylor says: "There is no doubt that the Indian pantomine is not merely capable of expressing a few simple notions, but that to the uncultured savage, with his few and material ideas, it is a very fair substitute for his scanty vocabulary." Forty-three examples of this gesture language are given, collected by Mr. Pehoff, as occurring between Indians of different tribes. Colonel Mallery in his Dictionary of Indian Signs observes: "The sign language of the Indians, and the gesture system of deaf-mutes, and of all peoples, constitute together one language—the gesture speech of mankind—of which each system is a dialect."

In Italy the power of expression by pantomine is particularly strongly developed, and whole plays are carried out through the use of gestures alone, and are thoroughly enjoyed by the people. Even in England, where gestures are less used than in any other country, one is astonished at the number of ideas which we can, and do, express by gestures. Knowing the strong influence of atavism, it is a legitimate deduction from the world-wide prevalence of gesture language that gestures formed an important part of the original means of communication between human beings, and if we are to judge from ontogeny, preceded the imitation of sounds in nature and the arbitrary invention of words, and developed *pari parsu* with the original howls and shrieks of primitive man. Tribes still exist whose words are unintelligible without the aid of gesture, and who are unable to carry on a conversation in the dark.

Researches into the mental faculties of civilized children and uncivilized men, as well as into the mental faculties of the highest animals, such as the elephant, the monkey and the dog, show, as was said at the beginning of this article, a difference of degree but not of kind. Immense is the distance between the mind of a Shakespeare or a Newton and the mind of a Hottentot. But the distance is also immense between the green scum, the one-celled alga of our ponds and ditches and the lordly oak; yet each belongs to the vegetable kingdom, and there is no break in the innumerable forms which fill up the wide space between the pond scum and the oak.

With regard to the theory that language is a divine gift from the very beginning bestowed upon man and denied to the lower animals, some light is thrown by the condition of what may be called 'relapsed man;' those cases where children have either been reared by and with wild animals or have run into the woods when young and managed to survive.

An instance recently occurred on Mount Pindus, in Thessaly. The warden of the King's forest on Mount Pindus was strolling up to a shepherd's hut whilst on a shooting expedition, to procure a drink of milk. He heard a rustling in the bushes, and was raising his gun when the shepherd called out to him not to shoot. He saw a naked creature in the form of a man running in front of him, sometimes on its feet, more often on all fours. It reached the hut and began eagerly sucking up the buttermilk out of a trough into which cheeses had been pressed. The shepherds said the child was a Wallachian by birth. His father died, and his mother, distributing her children amongst her neighbors, went back to her own country. This boy had escaped into the woods and had kept himself alive there for four years. In the summer he drank buttermilk daily and 'lived well;' in the winter he took shelter in the caves and eat herbs and roots. The warden, pitying the child, bade the shepherds catch and bind him with a rope and then took him to his home at Trikala. Here he fed and clothed his little Orson, and placed him with a person who endeavored to teach him to talk, or kept the child when possible under his own charge. But the boy has *never learned to speak a word,* though he imitates the voices of many wild creatures.[1] The same inability to speak has been shown in the cases of other 'wild' children found in India, collected by Colonel Sleeman, the able officer who helped to suppress thuggism. In a district near the Goomtee River in the Province of Oude, wolves are never killed by the villagers from a fear of the ill-luck which their death might bring upon the village, and wolves consequently abound. A native trooper saw a large she-wolf leave her den, followed by three whelps and a little boy, all on their way to the river to drink. When chased by the trooper they all escaped to their den, the boy running on all-fours as fast as the young wolves. The whole party was dug out; the wolves were dug out and bolted; the boy was caught, bound with a rope, and after four days sent to an English officer, Captain Nicholetts. He was kindly treated, but he never learned to speak; he would fly at children and try to bite them, and ran to eat his food on all-fours. But he was friendly with a pariah dog, and would let him share his food. He would suck up a whole pitcher of milk. He never laughed or smiled, destroyed all his clothes, and in two years and a half ended his short life of piteous degradation, speaking once or twice as he lay dying, the words for water and aching head. Another child, caught in the same neighborhood, was even more savage, and would only eat raw flesh, on which he put his hands as a dog puts its fore-feet. His knees and knuckles were quite hard with running on all-fours. He was quite untamable, and at last lived in the village street with the pariah dogs, going every night into the jungle. A third boy, caught at Hasanpur, exhibited the same characteristics, his favorite playmates being the jungle wolves, which would caper round him and lick him. In all these cases the characteristics of relapsed man are the same; he walks and runs well on all-fours, cannot be taught to speak, lives on raw food, and drinks by suction, as a horse or cow drinks.

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[1] See Spectator, Jan. 9th, 1892.

Now if language be a God-given endowment exempt from the usual laws of evolution, a wild boy with uninjured brain should be able to learn to speak readily; indeed, he should be able to evolve some form of speech by himself. If, however, articulate speech is the result of long ages of evolution from speechless ancestors we can understand that the centre for articulate speech in the human brain requires stimulating and cultivating from early infancy; and if not so stimulated and cultivated will fail to exercise a faculty acquired *comparatively* late in the evolution of the species. With regard to other characteristics, every little child goes on all-fours, and not like any other animals, on the toes or soles of the feet, but on the knees. And every infant at first tries to "drink like a calf," putting its mouth *into* a cup to suck up the milk, and only slowly learning to drink from the edge.

It seems to me that the weight of evidence afforded by facts is in favor of the hypothesis that the human mind has followed the laws of evolution like everything else we know of in the universe; and that the apparent abyss between the intellect of man and that of the lower animals lies, as I have said before, in the nature of the organ which has been specially evolved in *Homo sapiens.*